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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,693	03/15/2001	Kimio Tatsuno	NIT-272	4307

24956 7590 02/23/2006

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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/814,693	TATSUNO ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not support increasing the thickness of an etalon.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-6, 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23 24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Watterson et al. ("Watterson") (US Patent Application Publication No. 2004/0091002).

Regarding claim 1 and 6, Watterson discloses an optical-fiber communication equipment comprising, a laser light source (fig. 3 and paragraph 0023), a means for changing light of the

laser light source to a parallel plane wave to form a parallel light path (fig. 4, element 120 and paragraph 0027), an etalon having two or more transmission bands and having a free spectral range matched with a channel grid interval of wavelength division multiplexing optical-fiber communication, determined by ITU recommendation (fig. 4, element 130 and paragraph 0028), and a first and a second light detecting means (fig. 4, element 145 and 175 and paragraphs 0028 and 0029), wherein: said etalon is located in the parallel light path (fig. 4); a wavelength of the laser light source is enabled to be changed so that said wavelength is fixed to a desired value of the channel grid interval of wavelength division multiplexing optical-fiber communication (fig. 3, element 105 and paragraph 0036); said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium having optical characteristics different from those of the light that is transmitted through said etalon (fig. 4, elements 125 and 150 and paragraphs 0027-0029); the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light (fig. 4, element 145 and 175 and paragraphs 0028 and 0029), signals from the first and the second light detecting means are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to desired value and said signal is used for controlling a wavelength of the laser light source so that the wavelength is kept to be a given wavelength (fig. 3 and paragraphs 0031 to 0040).

Regarding claims 3 and 8, Watterson discloses said etalon is a Fabry-Perot type etalon constructed of two or more kinds of materials, which differ from each other in at least one of temperature characteristics and a refractive index (fig. 4, element 130).

Regarding claims 4 and 9, Watterson discloses said etalon is a Fabry Perot type etalon, which depends on a channel grid interval of wavelength division multiplexing optical-fiber

communication (paragraph 0036), and thereby temperature characteristics of transmission characteristics of the Fabry Perot type etalon are compensated (abstract).

Regarding claims 5, 11, 17, 20 and 23, Watterson discloses the optical-fiber communication equipment of claim 1, wherein, the light source is located at a position that is shifted from an optical axis of the means for changing light of the laser light source to a parallel plane wave to form a parallel light path or a normal line of an incident end face for said etalon or the laser-light dividing means is located so that the normal line crosses the optical axis of the means for changing light of the laser light source to a parallel plane wave to form a parallel light path (figs. 3 and 4).

Regarding claim 12, Watterson discloses optical-fiber communication equipment comprising: a laser light source (fig. 3 and paragraph 0023), a means for changing light of the laser light source to a parallel plane wave to form a parallel light path (fig. 4, element 120 and paragraph 0027), an optical system for dividing the parallel plane wave (fig. 4, elements 125 and 150 and paragraphs 0027-0029), an etalon and a first and a second light detecting means wherein said etalon is located in the parallel light path (fig. 4, elements 130, 145 and 175); said laser light source is a laser light source that is capable of lasing at a plurality of lasing wavelengths (paragraph 0023), said etalon has a plurality of light transmission portions having desired wavelengths existing at given wavelength intervals, the wavelength interval of the light transmission portions is equivalent to a channel grid interval of wavelength division multiplexing optical-fiber communication (paragraph 0036), any one of said plurality of lasing wavelengths of the laser light source is equivalent to an emitting wavelength corresponding to a desired wavelength that is shifted to a wavelength portion having a highest transmittance among said plurality of light transmission portions provided by the etalon (paragraph 0035), said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two

pieces of light including light that is transmitted through said etalon and light passing through a medium having optical characteristics different from those of the light that is transmitted through said etalon (fig. 4 and paragraphs 0028 and 0029), signals based on photocurrents from the first and the second light detecting means, which received each of said divided pieces of light, are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to a desired value and said signal is used for controlling each of said plurality of lasing wavelengths provided by the laser light source so that each lasing wavelength is kept to be a given wavelength (fig. 3 and paragraphs 0031 to 0040).

Regarding claim 14, Watterson also discloses said etalon is a Fabry Perot type etalon constructed of two or more kinds of materials, which differs each other in at least one of temperature characteristics and a refractive index (fig. 4, element 130).

Regarding claim 15, Watterson discloses a thickness of said Fabry Perot type etalon, which depends on a channel grid interval of wavelength division multiplexing optical-fiber communication (paragraph 0036), and thereby temperature characteristics of transmission characteristics of the Fabry Perot type etalon are compensated (abstract and paragraph 0059).

Regarding claims 18 and 21, Watterson discloses optical-fiber communication equipment comprising, a laser light source (fig. 3 and paragraph 0023), a means for changing light of the laser light source to a parallel plane wave to form a parallel light path (fig. 4, element 120 and paragraph 0027), an etalon having two or more transmission bands (fig. 4, element 130 and paragraph 0028), and a first and a second light detecting means (fig. 4, element 145 and 175 and paragraphs 0028 and 0029), wherein: said etalon is located in the parallel light path (fig. 4); said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium having optical characteristics different from those of the light that is

transmitted through said etalon (fig. 4, elements 125 and 150 and paragraphs 0027-0029); the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light (fig. 4, element 145 and 175 and paragraphs 0028 and 0029), signals from the first and the second light detecting means are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to a desired value (fig. 3 and paragraphs 0031 to 0040). Watterson also discloses an etalon-based wavelength monitoring and control assembly where an etalon having a free spectral range corresponding to the desire ITU grid for WDM is used for wavelength locking to any peak wavelength of the grid (paragraphs 0032-0040).

Regarding claim 24, Watterson discloses the equipment of claim 1, wherein a thickness of said etalon is in range of 0.1mm to 10mm (paragraph 0036).

Regarding claim 26, Watterson discloses the equipment of claim 1, wherein said laser light source and said etalon are located on the same cooler (abstract).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watterson (US Patent Application Publication No. 2004/0091002) in view of Miller et al. ("Miller") (U.S. Pat. No. 4,790,634).

Regarding claim claims 2, 7 and 13, Watterson discloses an optical communication equipment as described in the above sections including a etalon is a Fabry-perot type etalon a where the thickness of the medium is set so that a plurality of light transmission portions are generated at given wavelength intervals (paragraph 0036). Watterson does not disclose the refractive index range of the etalon but discloses the formula for free spectral range of the etalon. It would have been obvious to one of ordinary skill in the art at the time of the invention that the refractive index of the etalon would be within a range of 1.0 to 4.0, since the etalon will inherently have a greater refractive index than air. Watternson does not disclose the surface reflectivities of both reflection planes of the etalon are within a range of 20 to 70%. However, Miller shows a medium of Fabry-Perot etalon that having the reflectivity of 70% (col. 4, lines 15-18). Therefore, it would have been obvious to one of ordinary skill in the art to apply surface reflectivities on both reflection planes with the range taught by Miller for the system of Watterson in order to create an optical communication system that can support the emitted wavelengths of the laser source and obtain the desired intensity of reflected light at low cost (Miller, col. 2, lines 23-24).

7. Claims 10, 16, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watterson (US Patent Application Publication No. 2004/0091002) in view of Munks et al. (Hereinafter "Munks") (U.S. Pat. No. 6353623).

Regarding claims 10 and 16, Watterson discloses the optical communication system of claims 6 and 12; however, Watterson does not disclose an information storing portion for storing temperature characteristics of a light transmission portion of the etalon, and according to a signal from the temperature detecting means and said stored temperature characteristics of light transmission portion of the etalon, a shift of an emitting wavelength of the laser light source from

a channel grid wavelength is compensated. Munks discloses an information storing portion (col. 7, lines 54-67), and said laser light source comprises a temperature detecting means (fig. 1), wherein the information storing portion stores temperature characteristics of a light transmission portion of the etalon (col. 7, lines 54-67), and according to a signal from the temperature detecting means and said stored temperature characteristics of light transmission portion of the etalon, a shift of an emitting wavelength is compensated (col. 2, lines 36-59). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a storing means for storing the temperature characteristics as taught by Munks for the system of Watterson in order to store the temperature information. One would have been motivated for doing this since storing information would provide the benefit of easier wavelength and power monitoring considering temperature, without significant interruption of the light.

Regarding claims 19 and 22, Watterson discloses an optical-fiber communication equipment according to claims 18 and 21, but does disclose an information storing portion for storing temperature characteristics of a light transmission portion of the etalon, and according to a signal from the temperature detecting means and said stored temperature characteristics of light transmission portion of the etalon, a shift of an emitting wavelength of the laser light source from a channel grid wavelength is compensated. However, Munks discloses an information storing portion (col. 7, lines 54-67), and said laser light source comprises a temperature detecting means (56, fig. 1), wherein the information storing portion stores temperature characteristics of a light transmission portion of the etalon (col. 7, lines 54-67), and according to a signal from the temperature detecting means and said stored temperature characteristics of light transmission portion of the etalon, a shift of an emitting wavelength is compensated (col. 2, lines 36-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a storing means for storing the temperature characteristics as taught by

Munks for the optical system of Watterson in order to store the temperature information. One would have motivated for doing this since storing information would provide the benefit of easier wavelength and power monitoring considering temperature, without significant interruption of the light.

Response to Arguments

8. Applicant's arguments of 2 December 2005 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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